

CLAIMS

1. A method of inhibiting oncogene-mediated transformation of a cell, comprising contacting the cell with a *neu*-suppressing gene product and a chemotherapeutic drug in amounts effective to inhibit the transformed phenotype.
2. The method of claim 1, wherein the oncogene-mediated transformation is *neu* oncogene-mediated transformation.
3. The method of claim 1, wherein the *neu*-suppressing gene product is introduced into the cell by the introduction of a gene encoding a *neu*-suppressing gene product.
4. The method of claim 3, wherein the *neu*-suppressing gene is an E1A gene.
5. The method of claim 4, wherein the E1A gene encodes the E1A 12S or 13S gene product.
6. The method of claim 4, wherein the E1A gene encodes either the E1A 12S or 13S gene product.
7. The method of claim 4, wherein the E1A gene encodes both the E1A 12S and 13S gene products.

8. The method of claim 3, wherein the *neu*-suppressing gene is an LT gene.

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9. The method of claim 8, wherein the LT gene encodes an LT mutant.

10. The method of claim 8, wherein the LT mutant is a nontransforming mutant.

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11. The method of claim 10, wherein the nontransforming mutant is K1.

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12. The method of claim 1, wherein the chemotherapeutic drug is selected from the group consisting of alkylating agents, plant alkaloids, or antibiotics and other antineoplastic agents.

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13. The method of claim 1, wherein the chemotherapeutic is an alkylating agent.

14. The method of claim 14, wherein the alkylating agent is mechlorethamine, cyclophosphamide, ifosfamide chlorambucil, melphalan, busulfan, thiotepa, carmustine, lomustine, or shreptoizin.

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15. The method of claim 1, wherein the chemotherapeutic agent comprises a plant alkaloid.

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16. The method of claim 15, wherein the plant alkaloid is vincristine, vinblastine or taxol.

5 17. The method of claim 15, wherein the plant alkaloid is taxol.

18. The method of claim 1, wherein the chemotherapeutic agent is an antibiotic.

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19. The method of claim 18, wherein the antibiotic is dactinomycin, daunorubicin, idarubicin, bleomycin, mitomycin, or doxorubicin.

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20. The method of claim 18, wherein the antibiotic is doxorubicin.

21. The method of claim 1, wherein the chemotherapeutic drug is an antineoplastic.

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22. The method of claim 21, wherein the antineoplastic agent is selected from the group consisting of cisplatin, VP16, and TNF.

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23. The method of claim 1, wherein the *neu*-suppressing gene product is introduced to the cell prior to the administration of the chemotherapeutic agent.

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24. The method of claim 1, wherein the chemotherapeutic agent is administered to the cell prior to introduction of the *neu*-suppressing gene product.

25. The method of claim 1, wherein the *neu*-suppressing gene product is introduced to the cell and the chemotherapeutic drug is administered to the cell substantially simultaneously.

26. The method of claim 1, wherein the cell is located within an animal and effective amounts of the *neu*-suppressing gene product and the chemotherapeutic drug are administered to the animal.

27. The method of claim 1, wherein the chemotherapeutic drug is suitably dispersed in a pharmacologically acceptable formulation.

28. The method of claim 1, wherein the cell is contacted with a single composition for introducing an *neu*-suppressing gene product and administering a chemotherapeutic agent.

29. The method of claim 28, wherein the composition is suitable the composition is suitably dispersed in a pharmacologically acceptable formulation.

30. The method of claim 1, wherein the a *neu*-suppressing gene product is introduced into the cell by introduction of a *neu*-suppressing gene using a *neu*-suppressing gene DNA/liposome complex.

31. The method of claim 30, wherein the liposome comprises DOTMA, DOPE, or DC-Chol.

5 32. The method of claim 30, wherein the liposome comprises DC-Chol.

33. The method of claim 30, wherein the liposome comprises DC-Chol and DOPE.

10 34. The method of claim 30, wherein the DNA/liposome complex is administered by injection.

15 35. The method of claim 1, wherein the a *neu*-suppressing gene product is introduced into the cell by introduction of a vector containing a *neu*-suppressing gene.

20 36. The method of claim 35 wherein the vector is a viral vector.

37. The method of claim 35 wherein the vector is an adenoviral vector.

25 38. The method of claim 1, wherein the cell is a human cell.

39. The method of claim 38, wherein the cell is a lung cancer cell.

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41. A method of sensitizing a cancer cell to a chemotherapeutic drug comprising exposing the cell with an amount of a *neu*-suppressing gene product effective to inhibit *neu*-mediated tyrosine kinase activity in the cell.
42. The method of claim 41, wherein the *neu*-suppressing gene product is introduced via the introduction of a gene encoding the *neu*-suppressing gene product.
43. The method of claim 42, wherein the *neu*-suppressing gene product is an E1A gene product.
44. The method of claim 41, wherein the *neu*-suppressing gene product is an LT gene product.
45. A method of inhibiting *neu*-mediated cancer comprising administrating to an animal having or suspected of having cancer an effective combination of *neu*-suppressing gene product and chemotherapeutic drug in an effective amount to inhibit the cancer.
46. The method of claim 45, wherein the animal is a mammal.
47. The method of claim 46, wherein the mammal is a human.

48. The method of claim 45 comprising introducing into the animal a therapeutically effective amount of a *neu*-suppressing gene product and contacting the animal with a chemotherapeutic drug.

49. The method of claim 45 wherein a cancer site is contacted with a chemotherapeutic drug by administering to the animal a therapeutically effective amount of a pharmaceutical composition comprising a chemotherapeutic drug.

50. The method of claim 45, wherein the chemotherapeutic drug is cisplatin.

51. The method of claim 45, wherein the chemotherapeutic drug is doxorubicin.

52. The method of claim 45, wherein the chemotherapeutic drug is VP16.

53. The method of claim 45, wherein the *neu*-suppressing gene product is introduced via the introduction of a gene encoding the *neu*-suppressing gene product.

54. The method of claim 53, wherein the *neu*-suppressing gene product is an E1A gene product.

55. The method of claim 53, wherein the *neu*-suppressing gene product is an LT gene product.

56. A pharmaceutical composition comprising DNA encoding a *neu*-suppressing gene product gene and a chemotherapeutic drug.

5 57. The composition of claim 56, wherein the chemotherapeutic drug is cisplatin, doxorubicin, VP16, taxol, or TNF.

58. The composition of claim 56, wherein the chemotherapeutic drug is cisplatin.

10 59. The composition of claim 56, wherein the chemotherapeutic drug is doxorubicin.

15 60. The composition of claim 56, wherein the chemotherapeutic drug is VP16.

61. The composition of claim 56, wherein the *neu*-suppressing gene product is an E1A gene product.

20 62. The composition of claim 56, wherein the *neu*-suppressing gene product is an LT gene product.

25 63. A pharmaceutical combination comprising a gene expressing a *neu*-suppressing gene product and a chemotherapeutic drug.

30 64. The pharmaceutical combination of claim 63, wherein the *neu*-suppressing gene product is an E1A gene product.



65. The pharmaceutical combination of claim 63, wherein the *neu*-suppressing gene product is an LT gene product.

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66. The pharmaceutical combination of claim 63, wherein the chemotherapeutic drug is cisplatin, doxorubicin, VP16, taxol, or TNF.

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67. The pharmaceutical combination of claim 63, wherein the chemotherapeutic drug is cisplatin.

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68. The pharmaceutical combination of claim 63, wherein the chemotherapeutic drug is taxol.

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69. The pharmaceutical combination of claim 63, wherein the chemotherapeutic drug is doxorubicin.

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70. The pharmaceutical combination of claim 63, wherein the chemotherapeutic drug is VP16.

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71. The pharmaceutical combination of claim 63, wherein the chemotherapeutic drug is TNF.

72. The pharmaceutical combination of claim 63, wherein the *neu*-suppressing gene product gene and the chemotherapeutic drug are comprised in the same pharmaceutical composition.

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73. A therapeutic kit comprising in suitable container, a pharmaceutical formulation of an *neu*-suppressing gene product, and a pharmaceutical formulation of a chemotherapeutic drug.

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74. The kit of claim 73, wherein the pharmaceutical formulation of an *neu*-suppressing gene product and the pharmaceutical formulation of a chemotherapeutic drug are present in the same container.

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75. The kit of claim 73, wherein the pharmaceutical formulation of an *neu*-suppressing gene product and the pharmaceutical formulation of a chemotherapeutic drug are present within distinct containers.